

JAPAN

EDICT OF GOVERNMENT

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JIS B 9706-1 (2009) (English): Safety of
machinery -- Indication, marking and actuation --
Part 1: Requirements for visual, acoustic and
tactile signals

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

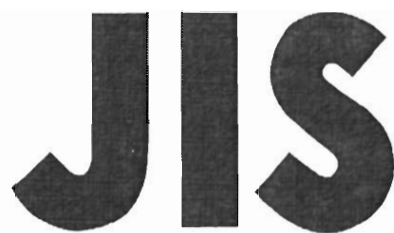
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JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 9706-1 : 2009

(IEC 61310-1 : 2007)

(JMF)

**Safety of machinery—
Indication, marking and actuation—
Part 1: Requirements for visual,
acoustic and tactile signals**

ICS 13.110

Reference number : JIS B 9706-1 : 2009 (E)

Date of Establishment: 2001-09-20

Date of Revision: 2009-04-25

Date of Public Notice in Official Gazette: 2009-04-27

Investigated by: Japanese Industrial Standards Committee
Standards Board

Technical Committee on Industrial Machinery

JIS B 9706-1 : 2009, First English edition published in 2009-11

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Printed in Japan

TK/AT

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Health, Labour and Welfare, and the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Machinery Federation (JMF) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS B 9706-1** : 2001 is replaced with this Standard.

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JIS B 9706 consists of the following three parts under the general title “*Safety of machinery—Indication, marking and actuation*”

Part 1: Requirements for visual, acoustic and tactile signals

Part 2: Requirements for marking

Part 3: Requirements for the location and operation of actuators

Safety of machinery— Indication, marking and actuation— Part 1: Requirements for visual, acoustic and tactile signals

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **IEC 61310-1** published in 2007 without any modifications of the technical contents.

The portions underlined with dots are the matters not given in the corresponding International Standard.

At human-machine interfaces, warning and danger signals need to convey safety-related meanings for the safe use and monitoring of machinery for exposed persons and operators.

It is via the human-machine interface that the operator interacts with the machinery or process in an open-loop system (see figure 1). This interface consists of actuators, by means of which the operator initiates actions, and indicating devices, through which the operator receives information. In many applications, the information is represented by a signal which is encoded by a distinct set of rules and the operator has then to interpret the signal according to these rules. Different types of coding such as colour, shape or time are used as appropriate to the demands of the task of the operator.

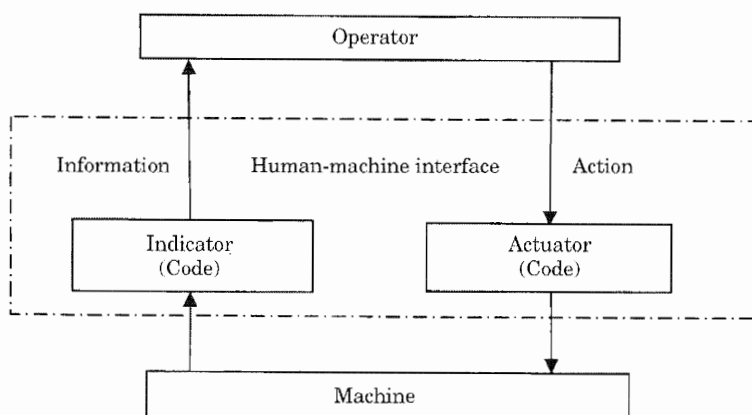


Figure 1 HMI (human-machine interface)

The reasons for using codes are:

- to permit the spatial separation of the machinery from centralized control stations;
- to increase the perceptible amount of information given by an indicating device, for example, per display area unit, per unit of time;
- to decrease the mental work-load of an operator and/or exposed persons.

1 Scope

This Standard specifies requirements for visual, acoustic and tactile methods of indicating safety-related information, at the human-machine interface and to exposed persons.

It specifies a system of colours, safety signs, markings and other warnings, intended for use in the indication of hazardous situations and health hazards and for meeting certain emergencies. It also specifies ways of coding visual, acoustic and tactile signals for indicators and actuators to facilitate the safe use and monitoring of the machinery.

This Standard is based on **IEC 60073** with regard to coding by colour and alternative means, but is not limited to electrotechnical aspects.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows:

IEC 61310-1:2007 *Safety of machinery—Indication, marking and actuation—Part 1: Requirements for visual, acoustic and tactile signals* (IDT)

The symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. For standards with the year indication, only the editions of the indicated year shall apply but the revisions (including amendments) made thereafter shall not apply. The normative references without the indication of the year shall apply only to the most recent edition (including amendments).

JIS B 9703 *Safety of machinery—Emergency stop—Principles for design*

NOTE : Corresponding International Standard: ISO 13850 *Safety of machinery—Emergency stop—Principles for design* (IDT)

JIS B 9960-1:2008 *Safety of machinery—Electrical equipment of machines—Part 1: General requirements*

NOTE : Corresponding International Standard: IEC 60204-1:2005 *Safety of machinery—Electrical equipment of machines—Part 1: General requirements* (MOD)

JIS Z 9101:2005 *Safety colours and safety signs—Design principles for safety signs in workplaces and public areas*

NOTE : Corresponding International Standard: ISO 3864-1:2002 *Graphical symbols—Safety colours and safety signs—Part 1: Design principles for safety signs in workplaces and public areas* (IDT)

ISO 7000:2004 *Graphical symbols for use on equipment—Index and synopsis*

ISO 7010:2003 *Graphical symbols—Safety colours and safety signs—Safety signs used in workplaces and public areas*

ISO 7731:2003 *Ergonomics—Danger signals for public and work areas—Auditory danger signals*

IEC 60417 *Graphical symbols for use on equipment*

IEC 60073:2002 *Basic and safety principles for man-machine interface, marking and identification—Coding principles for indicators and actuators*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE : The terms are sorted in alphabetical order.

3.1 actuator

part of the actuating system which receives a human actuating action

[IEV¹⁾ 441-15-22, modified]

NOTE : The actuator may take the form of a handle, knob, pedal, push-button, roller, plunger, mouse, light pen, keyboard, touch sensitive screen, etc.

Note ¹⁾ “IEV” is the abbreviation of International Electrotechnical Vocabulary.
IEV is specified in **IEC 60050** series.

3.2 brightness

attribute of a visual sensation according to which an area appears to emit more or less light

(See **03012** in **JIS Z 8113**.)

3.3 coding

systematic representation of specific signals or values by another set of signals, which has to conform to a definite set of rules

3.4 contrast

- a) **in the perceptual sense**: difference in appearance of two or more parts of a field seen simultaneously or successively

NOTE 1 Examples of types of contrast are brightness contrast, colour contrast, simultaneous contrast, successive contrast, etc.

- b) **in the physical sense**: quantity intended to correlate with the perceived brightness contrast, usually defined by one of a number of formulae which involve the luminances of the stimuli considered

NOTE 2 For example: contrast is given by $\Delta L/L$ near the luminance threshold²⁾, or by L_1/L_2 for much higher luminances.

Note ²⁾ “Luminance threshold” means the lowest luminance of a stimulus which enables it to be perceived (see **JIS Z 8113, 02022**).

(See **02024** in **JIS Z 8113**.)

3.5 exposed person

any person wholly or partially in a danger zone³⁾

Note ³⁾ “Danger zone” means any zone within and/or around machinery in which a person is exposed to hazard (see **JIS B 9700-1, 3.10**).

3.6 graphical symbol

visually perceptible figure with a particular meaning used to transmit information independently of language

(See **ISO 17724, 3.1**.)

3.7 hazard

potential source of harm

NOTE 1 The term “hazard” can be qualified in order to define its origin (e.g. mechanical hazard, electrical hazard) or the nature of the potential harm (e.g. electric shock hazard, cutting hazard, toxic hazard, fire hazard).

NOTE 2 The hazard envisaged in this definition:

- either is permanently present during the intended use of the machine (e.g. motion of hazardous moving elements, electric arc during a welding phase, unhealthy posture, noise emission, high temperature);
- or may appear unexpectedly (e.g. explosion, crushing hazard as a consequence of an unintended/unexpected start-up, ejection as a consequence of a breakage, fall as a consequence of acceleration/deceleration).

(See **JIS B 9700-1, 3.6**.)

3.8 hazardous situation

circumstance in which a person is exposed to at least one hazard

The exposure can immediately or over a period of time result in harm.

(See **JIS B 9700-1, 3.9**, modified.)

3.9 illuminated actuator

actuator with an integrated light source giving visual indication by illumination

The operation of the light source may be related to or independent of the actuator action.

(See **IEC 60073 : 2002, 3.8**.)

3.10 machinery, machine

assembly of linked parts or components, at least one of which moves, with the appropriate machine actuators, control and power circuits, jointed together for a specific application, in particular for the processing, treatment, moving or packaging of a material

The terms “machinery” and “machine” also covers an assembly of machines which, in order to achieve the same end, are arranged and controlled so that they function as an integral whole.

(See **JIS B 9700-1, 3.1**, modified.)

3.11 message (in telegraphy and data communication)

group of characters and function control sequences which is transferred as an entity from a transmitter to a receiver, where the arrangement of the characters is determined at the transmitter

(See IEC 721-09-01.)

3.12 operator

person or persons given the task of installing, operating, adjusting, maintaining, cleaning, repairing or transporting machinery

3.13 risk

combination of the probability of occurrence of harm and the severity of that harm

(See JIS B 9700-1, 3.11.)

3.14 safety sign

sign which gives a general safety message, obtained by a combination of a safety colour⁴⁾ and geometric shape and which, by the addition of a graphical symbol, gives a particular safety message

[See JIS Z 9101, 3 b).]

Note ⁴⁾ "Safety colour" means the colour with special properties to which a safety meaning is attributed [see JIS Z 9101, 3 a)]. For the details of safety colour and contrast colour see JIS Z 9101 and JIS Z 9103.

3.15 saturation

chromaticness, colourfulness, of an area judged in proportion to its brightness

NOTE : For given viewing conditions and at luminance levels within the range of photopic vision, a colour stimulus of a given chromaticity exhibits approximately constant saturation for all luminance levels, except when the brightness is very high. In JIS Z 8113 "saturation" is referred to as "HÓWADO" in Japanese.

3.16 signals**3.16.1 acoustic signal**

message conveyed by means of tone, frequency and intermittency, emanating from a sound source

(See IEC 60073 : 2002, 3.2.1.)

3.16.2 active signal

information provided by a device whose status can readily change which is given to indicate a change in machinery status or to alert to a change in risk (see examples in table 1)

3.16.3 passive signal

information provided by a device which gives permanent information about the machinery or its environment (see examples in table 1)

3.16.4 tactile signal

message conveyed by means of vibration, force, surface roughness, contour or position

3.16.5 visual signal

message conveyed by means of brightness, contrast, colour, shape, size or position

4 Presentation of safety-related information

4.1 General

To reduce the risk to which persons may be exposed,

- machinery shall be fitted with means of giving signals which provide appropriate safety-related information;
- actuators shall be capable of being used safely, and shall be clearly identified with appropriate markings on or near the actuator;
- machine manufacturer shall provide means in order to check the operation of warning signals by the operator.

Active signals shall be provided to signal a hazard and to call persons to take a specific course of action.

Passive signals shall be provided to warn of permanent risk and to give information, for example, on the location of escape routes, emergency stop actuators.

NOTE 1 Examples of active and passive signals are given in table 1.

All safety-related signals shall be so designed that their meaning is clearly and unambiguously evident to the operator. Ergonomic principles shall be taken into account especially in the design and installation of the machine. To this end, such signals and their associated coding shall be applied consistently throughout the machinery. The selection of equipment to be used shall take into account the consequences of failure of that equipment [for example, lamp filament, colour gun in a video display unit (VDU) giving rise to a loss of signal].

NOTE 2 The measures taken should be determined from the risk assessment.
Not specified in this Standard.

Safety-related information shall be presented using means which are compatible with the capabilities of the operators and/or exposed persons. Where possible, visual signals shall be used. Where it is probable that people with sensory deficiencies, for example, blindness, colour blindness, deafness, or those arising from the use of personal protective equipment, need to perceive safety-related signals, particular attention shall be paid to ensure this is addressed by supplementary means, such as the following:

- use of more than one sense (sight, hearing, touch);
- use of multiple coding (see **5.2.2**).

Supplementary means to visual signals shall be selected and used in situations where

- a) an excess of other information could cause the signal to be not easily perceived;
- b) visual signals alone are insufficient because
 - the operator needs to look elsewhere while handling/actuating controls;
 - exposed persons are out of sight of the operator;
 - exposed persons cannot see the warning signals.

Table 1 Examples of signals

Signal	Visual (see 4.2)	Acoustic (see 4.3)	Tactile (see 4.4)
Active	On/off or change of – colour – brightness – contrast – saturation Flashing Change of position	On/off or change of – frequency – intensity (sound level) Type of sound	Vibration Change of position Click/snap Positive-detent positioning
Passive	Safety sign Supplementary sign Marking Shape, colour	Silence	Shape Surface roughness Relief Relative position

4.2 Visual signals

4.2.1 General

A visual signal shall be

- placed so that it is in the person's field of vision;
- of suitable brightness and colour-contrast compared to its background.

A steady light is normally used for indicator lights and illuminated actuators. For further discrimination and information, and especially to give additional emphasis, a flashing light should be used.

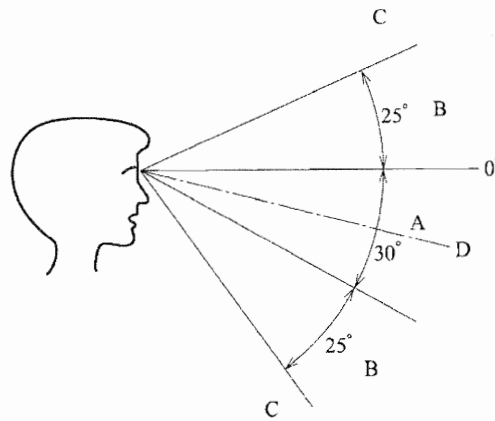
4.2.2 Field of vision

To be readily detected, visual signals shall conform to the following.

- a) The positions of signals and light sources shall be selected so that the display is visible from all necessary viewing positions.
- b) Active safety-related signals shall be positioned so that they are visible to operators from working positions, and to exposed persons, and shall have as wide a viewing angle as needed for safe detection.
- c) Visual displays which have a limited viewing angle shall be positioned in such a way as to be readable from all positions where it is needed for safe detection.
- d) Passive visual signals such as safety signs, supplementary labels and markings shall be so placed that those who need to be informed are able to see the signals without having to move in such a way as to increase the risk to themselves and/or to others.

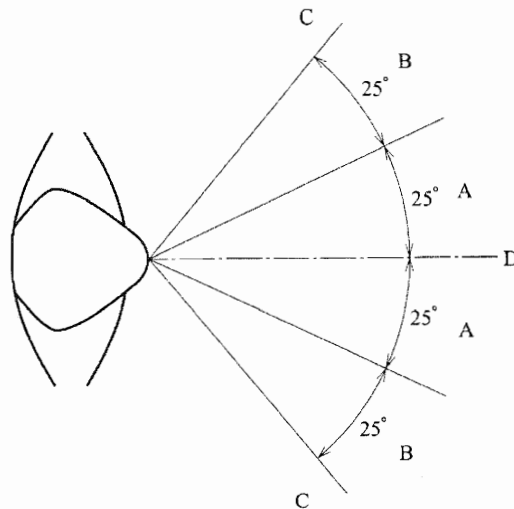
NOTE 1 Figures 2 and 3 show zones of recommended and acceptable, vertical and horizontal fields of vision.

NOTE 2 Requirements for the height, width, and stroke width of characters of textual information are given in **JIS Z 8513**.



Zone A: recommended
Zone B: acceptable
Zone C: not suitable
Zone D: natural (median) line of sight

Figure 2 Zones of vertical field of vision



Zone A: recommended
Zone B: acceptable
Zone C: not suitable
Zone D: natural (median) line of sight

Figure 3 Zones of horizontal field of vision

4.2.3 Brightness, colour and contrast

The brightness, colour and contrast of visual signals shall conform to the following.

- For light-emitting displays, the brightness contrast ratio shall be not less than 6:1.
- The image quality of the display shall be high under all normal and emergency observation conditions.

- c) All anticipated (for example, emergency) viewing conditions shall be catered for by provision of necessary illumination for displays that do not emit light.

4.2.4 Graphical symbols

Graphical symbols shall be simple, distinct and logical, to be understood easily and interpreted unambiguously. Where possible, the graphical symbols shall conform to **IEC 60417** and **ISO 7000**.

NOTE : General principles for the design of graphical symbols for use on machinery are given in **JIS Z 8221** series. Typical graphical symbols specified in **IEC 60417** are exemplified in Annex A of this Standard.

4.2.5 Safety signs and supplementary signs

Safety signs shall be visible under intended and foreseeable conditions of use.

The safety information such as prohibition, mandatory action or warning shall be given by the combination of geometric shape, safety colour, contrast colour⁵⁾ and graphical symbol.

Safety signs shall conform to **ISO 7010**⁶⁾.

Where the safety sign by itself does not convey the total message necessary for safety, supplementary signs⁷⁾ shall be used to give additional textual information and shall be used only in conjunction with the safety sign.

Supplementary signs shall conform to **JIS Z 9101**.

Notes ⁵⁾ "Contrast colour" means an achromatic colour which has an effect to complement safety colour with using graphical symbols, characters, ground colours, etc. [see **JIS B 9103, 3 a)**].

⁶⁾ A part of graphical symbols in **ISO 7010** is described in **JIS Z 9104, Annex 2**.

⁷⁾ "Supplementary sign" means sign that is supportive of another sign and the main purpose of which is to provide additional clarification [see **JIS Z 9101, 3 d)**].

4.3 Acoustic signals

An acoustic signal shall warn of an imminent hazard and shall mark the onset and the duration of a hazardous situation. Where an operator has control or can intervene, the signal shall continue at least until the operator intervenes.

An acoustic signal shall

- have a sound level that is perceptibly higher than the level of ambient noise so that it is audible without being excessive or painful;
- be easily recognizable, particularly in terms of pulse length and the interval between pulses or groups of pulses, and be clearly distinct from any other acoustic signal and ambient noises;
- conform to the requirements for recognition, acoustic, discrimination and unambiguity specified in **ISO 7731**.

4.4 Tactile signals

The information transmitted through the tactile sense to the operator shall enable the recognition and differentiation of various elements for the actuation of different functions of the machinery, taking into account the surface roughness, the surface contour, the spatial shape of the various elements and their relative positions, independently of the senses of sight and hearing.

NOTE 1 Tactile signals are conveyed when a part of the human body, for example, finger, hand, foot, is intentionally brought into contact with a spatial surface of an actuator, for example, a push-button, a lever. Under certain conditions such as reduced visibility it may be necessary to rely on tactile signals alone.

NOTE 2 The recognition and the interpretation of a tactile signal implies that the operator knows the function of that signal.

5 Information coding

5.1 General

Information coding shall be used. Codes shall be selected at an early stage of machinery design in accordance with this Standard.

Methods of coding shall be selected from, but need not be limited to, the use of the following methods used alone or in combination (supplementary means):

- colours (visual);
- contrast (visual);
- symbols (visual);
- frequencies (steady/repetition rate) (acoustic, tactile);
- position (visual, tactile);
- shapes (visual, tactile);
- textures (visual);
- others.

Codes shall be explained in the associated documentation of the particular equipment and/or on the machine. Information shall be provided to enable instructions to be given to persons who may need to respond to such codes.

5.2 Coding of visual signals

5.2.1 Use of colours

The colour shall be chosen with regard to the information to be imparted. Colours of indicators and actuators shall be in accordance with table 2. The use of colours on the electrical equipment of machines shall be in accordance with **JIS B 9960-1**. Safety colours and contrast colours used in safety signs shall be in accordance with **JIS Z 9101**. In the case of emergency stop actuators the use of contrast colours shall be in accordance with **JIS B 9703**.

Table 2 Meaning of colours for coding—General principles

Colour	Meaning		
	Safety of persons or environment	Condition of machinery/process	State of equipment
Red	Danger/prohibition	Emergency	Faulty
Orange/yellow	Warning/caution	Abnormal	Abnormal
Green	Safe	Normal	Normal
Blue	Mandatory significance		
White Grey Black	No specific meaning assigned		

5.2.2 Coding by means supplementary to colour

Where coding by colour is used in a safety-related application, this shall be supplemented by other means of coding.

The meaning of a supplementary code shall be evident to the operators and shall be in accordance with table 3.

Table 3 Coding by supplementary means to colour (visual codes)

Supplementary means	Elements
Shape	Figure (alphanumeric, pictographs, graphical symbols, lines) Form (character font, size, line width) Texture (line type, shading, dotting)
Position	Location (absolute, relative) Orientation (with or without reference system)
Time	Changing over time (flashing): – Brightness – Colour – Shape – Position

NOTE 1 Further information on colour coding of actuators including illuminated actuators is given in **IEC 60073**.

NOTE 2 For actuation requirements, see **JIS B 9706-3**.

5.3 Coding of acoustic signals

The coding of acoustic signals for safety-related and other information by intensity, duration, pitch, timbre, pulse repetition frequency, two-tone sound, etc. to indicate conditions such as hazard, caution, all clear, and for announcements, shall be in accordance with table 4.

Table 4 Acoustic signals

Message category	Sound signal
HAZARD Action for protection or rescue	Characters available: ^{a)} – sweeping sounds – bursts of sounds – alternating tone pitch, for mandatory or priority action (two or three frequency steps)
CAUTION Warning to take indication action if and where necessary	Pattern of segments with constant pitch, the shortest at least 0.3 s; no more than two different lengths of segments in a pattern, preferably the first one long. When all segments are equal, repetition frequency shall be at least 0.4 Hz
ALL CLEAR SAFETY	Continuous sound, at least 30 s of constant pitch
PUBLIC ADDRESS Announcing information	Two-tone chime, high-low non-recurrent (followed by instruction or message)
NOTE : A system of sound signals which includes definitions, compositions, principles and qualities of sound signals is given in ISO 7731 .	
Note ^{a)} Urgency can be provoked by fast rhythm or dissonance.	

Table 5 gives examples of means of coding.

Table 5 Means of coding (acoustic codes)

Means	Characteristic
Type of sound	Tone Noise Spoken message
Pure tone	Selected frequency
Time	Change of – frequency composition over time – sound volume over time – total duration

5.4 Coding of tactile signals

The coding of tactile signals (see table 1) shall enable the unequivocal differentiation of various actuating elements for the actuation of different functions of the machine. Not more than five different shapes, such as the examples given in figure 4, shall be used in one application.

Safety-related tactile signals shall be described on or near the actuating element and in the operating instructions.

Table 6 gives examples of means of coding.

NOTE : Information on coding of tactile signals by relative position is given in **JIS B 9706-3**.

Table 6 Means of coding (tactile codes)

Means	Characteristic
Shape	Form Surface roughness
Force	Amplitude
Vibration	Amplitude Frequency
Position	Location (absolute, relative) Orientation (with or without reference system)
Time	Change of – force over time – vibration over time



Figure 4 Examples of shapes that can be discriminated by touch alone

Annex A (informative)

Graphical symbols related to the operation of actuators

Introduction

This Annex is to show examples of graphical symbols related to operation of actuators and not to constitute the provisions of this Standard.

A.1 Graphical symbols

Graphical symbols related to the operation of actuators shall conform to IEC 60417, currently used examples of which are given in table A.1. Whilst their applications are mainly for electrotechnical purposes, the symbols shall be used for other types of actuators, for example, mechanical, hydraulic, using the same function.

Table A.1 Graphical symbols related to the operation of actuators






Reference and symbol	Title	Function
IEC 60417-5007 	"ON" (power)	To indicate connection to the mains, at least for mains switches or their positions, and all those cases where safety is involved. NOTE 1 The meaning of this graphical symbol depends upon its orientation. NOTE 2 See also symbol 5264.
IEC 60417-5008 	"OFF" (power)	To indicate disconnection from the mains, at least for mains switches or their positions, and all those cases where safety is involved. NOTE: See also symbol 5265.
IEC 60417-5009 	Stand-by	To identify the switch or switch position by means of which part of the equipment is switched on in order to bring it into the stand-by condition. NOTE: See also symbol 5266.
IEC 60417-5010 	"ON"/"OFF" (push-push)	To indicate connection to or disconnection from the mains, at least for mains switches or their positions, and all those cases where safety is involved. Each position, "ON" or "OFF", is a stable position.
IEC 60417-5011 	"ON"/"OFF" (push button)	To indicate connection to the mains, at least for mains switches or their positions, and all those cases where safety is involved. "OFF" is a stable position, whilst the "ON" position only remains during the time the button is depressed.

Table A.1 (continued)












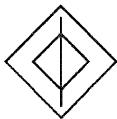





Reference and symbol	Title	Function
IEC 60417-5104 	Start (of action)	To identify the start button. NOTE: See also symbol 5177.
IEC 60417-5107A 	Normal run; normal speed	To identify the switch or switch position by means of which a normal run (for example, of tape) is started in the indicated direction. NOTE: In the orientation shown, the symbol means "normal run, forward". If shown reversed, the symbol means "normal run, backward".
IEC 60417-5107B 		Alternative graphical representation. Same meaning as 5107A.
IEC 60417-5108A 	Fast run; fast speed	To identify the switch or switch position by which a faster than normal run (for example, of tape) is started in the indicated direction. NOTE: In the orientation shown, the symbol means "fast run, forward". If shown reversed, the symbol means "fast run, backward" or "fast rewind".
IEC 60417-5108B 		Alternative graphical representation. Same meaning as 5108A.
IEC 60417-5110A 	Stop	To identify the control or the indicator to stop the active function.
IEC 60417-5111A 	Pause; interruption	To identify the control or the indicator which stops operation intermittently and keeps the equipment in operating mode.
IEC 60417-5124A 	Slow run; slow speed	To identify the control or the indicator to operate at a slower speed than the normal speed and in the direction indicated by the triangle. NOTE: In the orientation shown, the graphical symbol means "slow run, forward". If shown reversed, the graphical symbol means "slow run, backward".
IEC 60417-5124B 		Alternative graphical representation. Same meaning as 5124A.

Table A.1 (concluded)

Reference and symbol	Title	Function
IEC 60417-5125A 	Recapitulate	To identify the control or the indicator which permits rapid access within a recorded programme to repeat the section which has just been played.
IEC 60417-5125B 		Alternative graphical representation. Same meaning as 5125A.
IEC 60417-5177 	Fast start	To identify the control by means of which for example a process, a programme, a tape is started such that the operational speed is attained without significant delay. NOTE: To be used particularly when symbol 5104 is also used on the same equipment.
IEC 60417-5178 	Fast stop	To identify the control by means of which for example a process, a programme, a tape is stopped without significant delay. NOTE: To be used particularly when symbol 5110A is also used on the same equipment.
IEC 60417-5264 	"ON" for a part of equipment	To indicate the "ON" condition for a part of equipment, if the symbol 5007 cannot be used, for example, to identify the "ON" position of a switch. NOTE: To be used in association with the symbol 5265.
IEC 60417-5265 	"OFF" for a part of equipment	To indicate the "OFF" condition for a part of equipment, if the symbol 5008 cannot be used, for example, to identify the "OFF" position of a switch. NOTE: To be used in association with the symbol 5264.
IEC 60417-5266 	Stand-by or preparatory state for a part of equipment	To indicate the stand-by or preparatory state for a part of equipment, if the symbol 5009 cannot be used, for example, to identify the "STAND-BY" position of a switch.
IEC 60417-5638 	Emergency stop	To identify an emergency stop control device. This symbol shall be used in place of symbols 5110A or 5178 in cases where the safety of users of electrotechnical machines and equipment is the primary concern.

Bibliography

JIS B 9700-1 : 2004 *Safety of machinery—Basic concepts, general principles for design—Part 1: Basic terminology, methodology*

NOTE : Corresponding International Standard: ISO 12100-1 : 2003 *Safety of machinery—Basic concepts, general principles for design—Part 1: Basic terminology, methodology* (IDT)

JIS B 9706-3 : 2009 *Safety of machinery—Indication, marking and actuation—Part 3: Requirements for the location and operation of actuators*

NOTE : Corresponding International Standard: IEC 61310-3 : 2007 *Safety of machinery—Indication, marking and actuation—Part 3: Requirements for the location and operation of actuators* (IDT)

JIS Z 8113 : 1998 *Lighting vocabulary*

NOTE : Corresponding International Standard: IEC 60050-845 : 1987 *International Electrotechnical Vocabulary (IEV)—Chapter 845: Lighting* (MOD)

JIS Z 8221 (series) *Basic principles for graphical symbols for use on equipment*

NOTE : Corresponding International Standard: IEC 80416 (all parts) *Basic principles for graphical symbols for use on equipment* [-1&-2 : 2001, -3 : 2002 (IDT)]

JIS Z 8513 : 1994 *Ergonomics—Office work with visual display terminals (VDTs)—Visual display requirements*

NOTE : Corresponding International Standard: ISO 9241-3 : 1992 *Ergonomic requirements for office work with visual display terminals (VDTs)—Part 3: Visual display requirements* (MOD)

JIS Z 9103 *Safety colours—General specification*

JIS Z 9104 *Safety signs—General specification*

ISO 17724 : 2003 *Graphical symbols—Vocabulary*

IEC 60050-441 : 1984 *International Electrotechnical Vocabulary (IEV)—Chapter 441: Switchgear, controlgear and fuses*

IEC 60050-721 : 1991 *International Electrotechnical Vocabulary (IEV)—Chapter 721: Telegraphy, facsimile and data communication*

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